NEW JAPANESE FUNGI

NOTES AND TRANSLATIONS—IV

Tyôzaburô Tanaka

Botrytis liliorum Y. Fujikuro sp. nov. in Shokubutsu-gaku Zasshi (Bot. Mag.) Tôkyô, 28^{320}: 228–230, 1 fig. T. 3, v, May, 1914.

Mycelia hyaline, branching, 3–12 μ across, septate and granulate inside; conidiophores projecting from the stomata of the host; solitary or two together, dark-brown in color, gradually paler toward the outer ends and nearly hyaline at the tips, 490–780 × 16–21 μ, provided with 3–4 deciduous branchlets, which are sometimes dichotomously divided at the ends; conidia 4–6 to a branchlet, pale-gray, smooth, ovoid, broadly ovoid, or nearly spherical, sometimes irregularly shaped, 28–37 × 21–31 μ, averaging 32 × 27 μ, with granules 2–3 μ, germinating at the apex or lateral surface with 1–2 germination tubes 6–9 μ diam.

On *Lilium longiflorum* Thumb.

Type locality: Taikazeiho, Taihoku-chô, Formosa (Agr. Exp. Sta. farm).

Illustrations: One halftone text-figure showing hyphae, conidiophores, and conidia.

The author compared this fungus with others of the same genus, reported as attacking the lily plant (*Botrytis canescens* and the *Botrytis* form of *Sclerotinia parasitica*), but could not find any similarity, so he described it as a new species.

Discovered by the author at the experiment farm of the Taiwan (Formosa) agricultural experiment station, among plants sent from Lûchû Island. The disease, according to the author's statement, is as bad as any other three lily diseases ever found in Japan. It affects the plant mostly on the leaves, first appearing as small spots about 1 mm. diam., immediately spreading all over the surface, causing the total decay of the host plant. The

reproductive organs of the fungus appear on the decayed portion of the plant, giving it an appearance of powdery, fine fur.

PHYLLOSTICTA (PHOMA) KUWACOLA K. Hara sp. nov. in Dainippon Sanshi Kwaihô (Journ. Sericultural Association of Japan), Tôkyô, 26[304]: 390–391, T. 6, v, May 1917. (Japanese.)

Spots amphigenous, first minute (the size of *Sesamum* seeds), brownish, then increasing in size to 6–12 mm. diam., circular or polygonal, sometimes irregular, rufous, finally cinereous with concentric zones and determinate margins, punctate with minute black dots, mostly appearing on the upper surface of the spots; pycnidia sphaeroid or depressed sphaeroid, at first buried in the matrix, finally sub-emergent, dark-brown, 60–100 μ diam.; wall fungoid-parenchymatous, cells 5–10 μ diam.; ostiola slightly prominent or mammillate, later perforate; pycnospores numerous, ellipsoid, ovoid, cylindric or sub-fusoid, both ends rounded, nucleate at both ends but sometimes not, hyaline, 4–6 $\times$ 2–3 μ; sterigmata obsolete.

On living leaves, shoots and twigs of *Morus alba.*

Localities: Mino (Gifu-ken) and adjacent prefectures—the annual damage seems to be considerable.

The spots appear on the leaves and then gradually dry up, becoming lacerate in dry weather and rotting in rainy weather. When they appear on the margins of leaves, very frequently semi-circular holes are made; when two or more are formed close together they coalesce, becoming irregular spots which sometimes occupy considerable space on the leaf and cause the entire blade to decay. Young twigs are also attacked and quickly change to a brownish color and die, showing minute black pustules over the surface. Hard twigs when attacked by the fungus display rufous spots which later become blackish and sink considerably below the level, showing much roughness and cracking on the surface and finally causing the death of the upper part of the twig.

New Japanese name of the disease: Kuwa no Rinmonbyô (circle blotch of mulberry).

Phoma Mororum Berl. is the nearest to this species, but the pycnospores in the former species are curved while in *P. Kuwa-*

cola they are straight, and the details of pycnidial structure differ greatly in the two species.

SEPTOBASIDIUM ACACIAE Sawada sp. nov., in Nôji Shikenjô Tokubetsu Hôkoku (Special Report, Agr. Exp. Station) Taiwan (Formosa), no. 2: 103–104, pls. 11, 12. M. 44, xi, Nov. 1911. (Japanese.)

Mycelial strands (pilea) filamentous, rigid, tightly adhering to the bark, effused, 10 cm. across, 70–180 μ thick; surface smooth, brown or tobacco-brown when dry, brunneous when wet; margin grayish-white; hyphae yellowish-brown when mature, branched, septate, 3 μ in diam.; protobasidia appearing on superficial hyphae, spherical, colorless, finely guttulate, subsessile, 9–15 μ across; basidia rising from protobasidia, easily detached, cylindric, subacute above and truncate below, straight or slightly curved, hyaline, 1–5-septate, 52–81 $\times$ 4–6 μ; sterigmata from each cell of basidia, 4–12 μ long; basidiospore hyaline, oblong to oblong-obovoid, curved, 18–22 $\times$ 3–6 μ, germinating with short tubes carrying sporidia of about the same appearance as basidiospores measuring 11–15 $\times$ 3–5 μ.

On trunks and twigs of *Acacia Richii.*

Type locality: Taihokuchô Shakukô, Formosa, Sept. 26, 1910, K. Sawada and Y. Fujikuro; l. c. Oct. 7, 1910, Y. Fujikuro.

Additional hosts and localities: On *Glochidion obovatum* (Euphorbiaceae), Agr. Exp. Station ground, Taihoku-chô Taikazeiho, Formosa, Oct. 7, 1910, Y. Fujikuro; on *Citrus* sp. Taihoku-chô Kiirun, Mar. 28, 1911, K. Sawada.

Illustrations: One halftone plate showing diseased twigs of Acacia and Glochidion; one black and white lithographic plate with 16 figures showing detailed structure of the fungus.

NOTE: It has been further reported by K. Sawada (in Nôji Shikenjô Tokubetsu Hôkoku, Taiwan, No. 11, Feb. 1915) that this fungus also occurs in Formosa on *Prunus Persica* (peach), *Prunus salicina* (plum), *Thea sinensis* (tea plant), *Salix glandulosa* var. *Warburgii,* and *Melia Azedarach.*

The affection is closely related to the attack of scale insects, and in many cases the dead insects were found embedded in the mycelial strands. The fungus sometimes kills Acacia trees

as was discovered by a forest inspector, so immediate treatment is desirable.

For the purpose of washing off the fungus, concentrated wood-ash solution (30–50 per cent.) is recommended.

CERCOSPORA PINI-DENSIFLORAE Hori et Nambu sp. nov. ex Viscount N. Nambu in Byôchû-gai Zasshi (Journ. Plant Protection, Tôkyô, **5**[5]: 353–354. T. 6, v, May 1917. (Japanese.)

Acervuli punctiform, minute, black; conidiophores projecting from stromata, grouped, dark-brown, about 44 μ high, 4.4 μ across; conidia filiform or long-obclavate, slightly curved or straight, pale-yellow, 4–5-, sometimes 6-septate, 41.49–50.7 × 1.23–4.6 μ.

Hyphae pale-amber, intercellular; spots yellowish-brown, usually occurring on the upper half of the leaf; disease first starts from the upper part of the plant, gradually coming down, finally causing the death of all that portion of the plant above ground.

On leaves of young plants of *Pinus densiflora*.

Type locality: Nursery of Makago, Kagoshima-ken, Major Forest Office, September 20, 1915.

A great many young plants, mostly two years old, were fatally injured in the nursery above mentioned, which is located in the southern part of Kyûshû Island. The occurrence of this disease so far as reported seems to be only local but it seems likely to prove dangerous if it is not controlled by treatment of seedlings with Bordeaux mixture, as suggested by the writer.

HELICOBASIDIUM TANAKAE Miyabe, ex K. Sawada in Shokubutsugaku Zasshi (Bot. Mag.) Tôkyô, **26**[304]: 102–105, 2 figs., M. 45, iv, Apr. 1912 (Japanese); in J. Matsumura, Index Plantarum Japonicarum (Teikoku Shokubutsu Meikwan) **1**: 146, Mar. 1904. (Nom. nud.).

Stypinella Tanakae Miyabe, in K. Saida, Naigwai Futsû Shokubutsushi (Common flora of Japan and Foreign Lands) 1: 315. Aug. 1910 (Nom. nud.)

Septobasidium sp. M. Shirai in Saikin Shokubutsu Byôrigaku (Latest Plant Pathology), 3d ed., p. 356, Aug. 1907.

Mycelial strands (pilea) epigenous on trunks and twigs, first circular then increasing the area irregularly, often attaining 10 cm. diam., flat, lichenous, 1 mm. thick, surface velvety, brownish, pale-purplish-brown, or dark-brown, with very narrow thin margin grayish in color; hyphae branching, amber-colored, septate, thick-walled, granulate, in continuous row, 3–5 μ across; protobasidia not formed; basidia consisting of free branched ends of surface hyphae swollen and more or less club-shaped, first unicellular, hyaline and very granulate but at maturity sub-fusoid, 2–4-septate, straight or curved, 49–65 $\times$ 8–9 μ, producing sterigmata on each cell; sterigmata apical in the terminal cell, lateral in others, long, curved, comparatively large, 35–63 $\times$ 3.5–4 μ; sporidia terminal on each sterigma, hyaline, unicellular, long-falcate, obtuse, 27–40 $\times$ 4–6 μ, germinating to form hyphae.

On trunks and twigs of *Morus, Salix, Vitis, Juglans, Xanthoxylum, Prunus Mume, Prunus donarium, Prunus salicina, Prunus Armeniaca* var. *Ansu, Pyrus Malus, Pyrus sinensis, Ribes Grossularia, Kerria japonica, Thea sinensis, Paulownia tomentosa, Firmiana platanifolia,* and *Pittosporum undulatum.*

Distribution: Japan, very common.

Most Japanese authorities who have described this species have confounded it with *Septobasidium pedicellatum* (Schw.) Pat. but the true *S. pedicellatum* was first discovered in Formosa by Mr. Sawada (Bot. Mag., Tôkyô, **26**[310]: 307–311, Japanese) where *Helicobasidium Tanakae* does not occur. *Septobasidium pedicellatum* seems to attack only the mulberry tree and differs in having chestnut-brown hyphae 3.5 μ across, forming an ocher-brown pileus (never purplish), and in the formation of strongly curved basidia, 24–48 $\times$ 6–8.5 μ, which develop from spherical protobasidia.

NOTE: For an account of the occurrence of *Septobasidium pedicellatum* in Honshû (Main Island), we are indebted to Prof. A. Yasuda, who reported it from Kôdzuke-no-kuni (Prefecture Gumma-ken) Setagun (Bot. Mag. Tôkyô, **28**[335]: 447, Nov. 1914. Japanese). Hara later states that it occurs commonly in the main island (Dainippon Sanshi Kwaihô, Journ. Seric. Assoc. Japan, **25**[296]: 713, Sept. 1916). It has also been collected by Miyake at a place near Tôkyô (Sangyô Shikenjô Hôkoku **1**[5]: 333, Dec. 1916), and recently T. Watanabe reports that it is *S. pedicel-*

latum, not *Helicobasidium Tanakae,* which occurs on mulberry trees in the vicinity of Tôkyô (Sangyô Shimpô, Journ. of the Silk Industry, Tôkyô, 25^{287}: 88, Feb. 1917).

The last paper mentioned gives an interesting account of the parasitic nature of both species, not merely epiphytically covering the surface of the host as reported before. The hyphae, rather finer, measuring 3 μ across, almost colorless, attack the outer layer of phelloderm, entering mostly through complementary cells of lenticels, and there making conspicuous intracellular development, which is shown by penetrated cell-walls and well-nourished hyphae containing plenty of oil globules.

NOTHOPATELLA MORICOLA I. Miyake sp. nov. in Sangyô Shikenjô Hôkoku (Technical Rept. Imperial Sericultural Exp. Station) Tôkyô, Japan, 1^{5}: 344, pl. 17, figs. 15, 16, T. 5, xii, Dec. 1916. (Japanese.)

Pycnidia hypo-epidermal, conoid-pustulate, later erumpent, irregular, black; walls indefinitely pseudo-parenchymatous, not evidently differentiated from the matrix, forming pseudostromata, multilocular; ostiola simple, opening at the elevated portion of the pycnidia; conidia usually ellipsoid, rarely ovoid or elongate, nucleate with a comparatively large, greenish, oil-globule at each end, first colorless and hyaline, later olivaceous, unicellular, 2.7–3.8 $\times$ 1.5–2.5 μ; conidiophores covering the whole inner surface of pycnidia, abundant, hyaline, filiform, 10–14 $\times$ 1 μ.

On twigs of *Morus alba.*

Type locality: Iwate-ken, Morioka-shi, Apr. 5, 1915, I. Miyake.

Illustrations: Two lithographic figures showing pycnidium and conidia.

USTULINA MORI K. Hara sp. nov. in Dainippon Sanshi Kwaihô (Journ. of Sericultural Association, Japan), 26^{304}: 389. May 1917. (Japanese.)

Stromata superficial, effused, 1–4 cm. in diam., 2–3 mm. thick, first carnose, later rigid, lacquer-black or dusky-black, whitish inside, sometimes more or less repand, surface uneven, punctate with black dots, margin more or less rounded; perithecia immersed, seriately closely aggregated near the surface, ovoid, large,

1–1.2 mm., with punctiform ostiola, perforate; asci cylindric or clavate, rounded above, long-pedicellate below, 110–140 × 10–12 μ, octosporous, paraphysate; ascospores monostichous, ovoid, ellipsoid, or indefinitely fusoid, blunt, continuous, 1–2 nucleate, dark-colored, 7–10 × 4–5 μ; paraphyses filiform, simple, longer than asci, 1–1.5 μ across.

On trunks of *Morus alba*.

Type locality: Mino (Gifu-ken prefecture), Kawakami-mura, April, 1913, K. Hara.

Differs from *Ustulina microspora* in the shape and dimensions of ascospores.

VALSA PAULOWNIAE Miyabe et Hemmi.

Besides the description in Japanese translated in *Mycologia* for May, 1917, two other descriptions of the fungus have been published by one of the authors, Dr. Hemmi. All three descriptions are marked "n. sp." The first article to be published with the original description of the fungus (in English) appeared in Sapporo Hakubutsu Gakukwai Kwaihô (Transactions of the Sapporo Natural History Society), 6^2: 133–158, text-figs. 1–4, issued July 31, 1916. This article gives a full account in Japanese of the disease caused by this fungus and compares it with other similar diseases. The third and last of these articles is published in English in the Shokubutsu-gaku Zasshi (Botanical Magazine) Tôkyô, 36^{357}: 304–313, text-figs. 1–4, issued Sept. 20, 1916. This article also gives a description of *Valsa Paulowniae* n. sp. in English. One of the figures (Fig. 4) in each of these articles gives the detailed microscopic structure of the fungus. The other three figures show effects of the fungus on Paulownia trees. Dr. Hemmi notes that the fungus was first collected in Aomori-ken in N. Honshû in August, 1903, by Mr. T. Nakamura and reported then as causing a very destructive disease of the "Kiri" tree. All three articles are of importance in throwing light on a very dangerous *Paulownia* disease of Japan which is analogous to chestnut blight in America, both in its swift destructive action and in causing the loss of timber much valued for cabinet-making.

BUREAU OF PLANT INDUSTRY,
WASHINGTON, D. C.